

What is claimed is:

1. An electrochemical cell comprising an insulating substrate, at least two conducting layers, and at least two insulating layers, wherein said at least two conducting layers are separated by said insulating substrate or by at least one of said insulating layers.
2. The electrochemical cell of claim 1, wherein said electrochemical cell comprises two conducting layer and two insulating layers.
3. The electrochemical cell of claim 2, further including a third conducting layer and a third insulating layer.
4. The electrochemical cell of claim 1, wherein at least one conducting layer functions as a working electrode.
5. The electrochemical cell of claim 4, wherein said at least two conducting layers function as working electrodes.
6. The electrochemical cell of claim 5, wherein said working electrodes are capable of determining the presence of, or the concentration of, the same analyte.
7. The electrochemical cell of claim 5, wherein said working electrodes are capable of determining the presence of, or the concentration of, different analytes.
8. The electrochemical cell of claim 1, wherein at least one conducting layer functions as a counter electrode.
9. The electrochemical cell of claim 1, wherein at least one conducting layer functions as a reference electrode.

10. The electrochemical cell of claim 1, wherein at least one conducting layer functions as a dual-purpose reference/counter electrode

5 11. The electrochemical cell of claim 1, further having at least one passage formed in each of the conducting layers and insulating layers, the passage capable of receiving a liquid sample.

12. The electrochemical cell of claim 11, said at least one passage has a volume not exceeding 1 microliter.

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13. The electrochemical cell of claim 11, wherein said passage has a regular shape.

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14. The electrochemical cell of claim 11, wherein said passage has an irregular shape.

15. The electrochemical cell of claim 1, wherein said electrochemical cell further includes at least one reagent in contact with at least one conducting layer.

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16. The electrochemical cell of claim 15, wherein said at least one reagent is an enzyme.

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17. The electrochemical cell of claim 15, wherein said at least one reagent is integral with said at least one conducting layer.

18. The electrochemical cell of claim 1, wherein the thickness of each conducting layer does not exceed 100 micrometers.

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19. The electrochemical cell of claim 1, wherein the thickness of each insulating layer does not exceed 100 micrometers.

20. The electrochemical cell of claim 1, wherein said at least two conducting layers are separated by said insulating substrate.

21. The electrochemical cell of claim 1, wherein said at least two conducting layers are separated by at least one insulating layer.